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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/593,840

**Applicant(s)**

FRENZEL ET AL.

**Examiner**

ON S. MUNG

**Art Unit**

2483

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 14-31 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 14-31 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-850)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### DETAILED ACTION

1. This office action for US Patent application 10/593,840 is responsive to communications filed December 14, 2011, in response to the Non-Final Rejection of September 14, 2011. Currently, claims 14-31 are pending and are presented for examination.

### ***Response to Remarks***

2. Applicant's arguments filed on December 14, 2011, with respect to the claim 14-31 have been fully considered, but they are not persuasive.
3. Applicant urges that Hirakoso teaches "an image sensor in which the image quality is not uniform". Examiner respectfully disagrees. As examiner stated in cited portions of previous office action, Hirakoso clearly teaches that *"Only the field where the center portion of an imaging surface is narrow is the full color high resolution of inside sensitivity, and the image sensor used with the camera system 2 by this is constituted so that the characteristics of the monochrome low resolution of high sensitivity may be shown, as it goes to a peripheral part"* (see paragraph 0012), thus Hirakoso's image sensor provides the uniform image quality in color and monochrome coding in separate areas of sensor. In addition, examiner wants to point out another embodiment of Hirokoso's invention that *"the center portion of the imaging surface of the image sensor 10, stated the case where the complementary color system filter 21 was arranged to the peripheral part. This invention does not need to arrange a filter not only to this but to a peripheral part, and it may be made to arrange a colored filter to a part of peripheral part"*

concerned" (see paragraph 0026). It clearly indicates that Hiroko's image sensor can also uniformly provide color coding in peripheral part and other part would be monochrome coding. Therefore, it is not new in the art in the time of invention that sensor having color encoding only in partial areas thereof, and said sensor having monochrome encoding in all areas that are not color encoded as cited in claim 14.

4. Applicant continues to urge that Nakamura and Hirakoso's teachings are not combinable. In response to this argument, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *in re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR international Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, examiner has cited some portions of Hirakoso (e.g. color coding and monochrome coding in different parts of image sensor) to establish obviousness in order to improve the image quality in image sensor. In addition, both inventions are related to an image processing system for selecting and recognizing image information through image pickup operation. Therefore, the teachings of Hirakoso can be combined and included in Nakamura's imaging system.

5. In response to applicant's argument with respect to claim 20, examiner has cited only the portion of encoding image signal which is converted into NTSC signal to display. In addition to this argument, Nakamura discloses CCD camera is configured to

obtain image signal information on itself for further processing such as image separation and image extraction (see column 22 lines 1-65, column 24 lines 5-50). Furthermore, the conventional camera systems having digital CMOS (Complementary Metal-Oxide Semiconductor) or CCD (Charge-Coupled Device) image sensors are operable to obtain image information such as color coded stripes and areas in a single color or multiple colors.

6. Regarding claims 15-18, applicant has pointed out the teaching of secondary reference, Hirakoso. However, the examiner has cited only the portions of main reference, Nakamura to reject the claims that Nakamura explicitly discloses all limitations of claims 15-18 in the office action. Examiner has already explained "establishing obviousness by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art" as mentioned above.

7. Applicant is reminded that the machine translation is performed by machine translator in the best quality which is approved by the office. Examiner believes that the machine translation is sufficient to support the rejection.

8. Applicant is reminded that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In view of the above arguments, the examiner believes all rejections are proper and should be sustained.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1,148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. **Claims 14-20, 30, and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakamura et al. (US Patent 5987174)** (hereinafter Nakamura) in view of in view of **Hirakoso (JP2002026304A)** (hereinafter Hirakoso), (cited by IDS).

**Regarding claim 14**, Nakamura discloses monitoring unit (**Fig. 1**) for an exterior of a motor vehicle in a direction of travel of the motor vehicle (**See abstract; column 1 line 16-20**), which comprises at least one camera system with an image-recording sensor [e.g. CCD camera: **Fig. 1; column 8 line 42-53**].

Nakamura discloses image sensor having color encoding [**See abstract; Fig. 13 (1020); column 3 line 7-14, line 27-55; column 8 line 54-68; column 9 line 1-28**], but

explicitly fails to disclose said sensor having color encoding only in partial areas thereof, and said sensor having monochrome encoding in all areas that are not color encoded.

However, Hirakoso from the same or similar fields of endeavor teaches image pickup sensor device **[See Drawing 1; paragraphs 0002 and 0008]** having color encoding only in partial areas thereof **[See Drawing 3, Drawing 5 (center portion 20), Drawings 6-12, and 13 (center portion), paragraph 0002, 0003, 006, 0012, 0015, 0016-19, 22, 24, and 26: only center portion with high resolution is color coding]**, and said sensor having monochrome encoding **[e.g. monochrome low resolution of high sensitivity: see paragraph 0012]** in all areas that are not color encoded **[See Drawing 3, Drawing 5 (peripheral portion 21), Drawings 6-12, and 13 (peripheral portion), paragraph 0003, 006, 0012, 0015, 0016-19, 22, 24, and 26: peripheral part is made low resolution to obtain monochrome coded area].**

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura to add the teachings of Hirakoso as above, in order to perform color and monochrome coding separately within an image sensor so as to acquire uniform image quality in all the fields of the pictures concerned [See paragraphs 0002 and 0006: Hirakoso]. In addition, one of ordinary skill in the art would have motivation to do so to improve image quality in image sensor.

**Regarding claims 15 and 16,** Nakamura discloses wherein said partial areas with the color encoding **(See column 22 lines 48-50; column 24 lines 21-22; column 34 lines 1-3, lines 54-65)** are vertical stripes and/or areas on a right-hand and left-hand

image edge of said sensor. [See Fig. 3A, 3B: Left Lane, Right Lane; column 4 lines 9-11; column 6 lines 41-42] [Examiner read that since Nakamura's image sensor is color sensor and performs color coding on entire area, vertical parts of the sensor is also encoded in color coding].

**Regarding claim 17**, Nakamura discloses wherein said partial areas with the color encoding (See column 22 lines 48-50; column 24 lines 21-22; column 34 lines 1-3, lines 54-65) are selected from the group of vertical stripes, areas on a right-hand image edge of said sensor, and areas on a left-hand image edge of said sensor [See Fig. 3A, 3B: Left Lane, Right Lane; column 4 lines 9-11; column 6 lines 41-42] [Examiner read that since Nakamura's image sensor is color sensor and performs color coding on entire area, vertical parts of the sensor is also encoded in color coding].

**Regarding claim 18**, Nakamura discloses wherein said partial areas with the color encoding (See column 22 lines 48-50; column 24 lines 21-22; column 34 lines 1-3, lines 54-65) are horizontal stripes and/or areas on a bottom image edge of said sensor. [See Fig. 3A, 3B; Fig. 6; screen bottom, horizontal line; column 12 lines 63-68; column 13 lines 1-6, line 37-43] [Examiner read that since Nakamura's image sensor is color sensor and performs color coding on entire area, horizontal parts of the sensor is also encoded in color coding].

**Regarding claim 19**, Nakamura teaches wherein said partial areas with the color encoding (See column 22 lines 48-50; column 24 lines 21-22; column 34 lines 1-3,



**lines 54-65)** on the bottom image edge of said sensor are formed to coincide with a view of a camera onto a road directly over an automobile hood. **[See column 3 lines 63-65].**

**Regarding claim 20**, Nakamura discloses the monitoring unit, wherein the color encoding **(See column 22 lines 48-50; column 24 lines 21-22; column 34 lines 1-3, lines 54-65)** is defined in color-coded stripes and/or areas embodied in a single color **[See Nakamura: Fig. 22A and 22B; column 7 lines 29-41; column 22 lines 1-65, column 24 lines 5-50].**

**Regarding claim 30**, Nakamura discloses an assistance system for a motor vehicle, comprising at least one monitoring unit according to claim 14 is disposed to registers an exterior in a travel direction of the motor vehicle **[See column 4 lines 23-31].**

**Regarding claim 31**, Nakamura discloses the assistance system according to claim 30 is configured for traffic-sign and/or traffic-lane registering **[See Fig. 8A and 8B (traffic lane); column 1 line 5-13, line 45-67; column 2 lines 1-2].**

9. **Claims 21, 22, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakamura et al. (US Patent 5987174)** (hereinafter Nakamura) in view of **Hirakoso (JP2002026304A)**, and further in view of **Itoh (US2001/0052938A1)**.

**Regarding claim 21**, Nakamura and Hirakoso disclose all the limitations of claim 20, which are therefore analyzed as previously discussed with respect to those claims.

Nakamura and Hirakoso do not disclose wherein the color encoding is defined in vertical stripes and/or areas with red color encoding.

However, Itoh from the same or similar fields of endeavor teaches wherein the color encoding is defined in vertical stripes and/or areas with red color encoding. **[See Fig. 16 (R-Image); paragraph 0047, 0100, and 0101].**

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the red color encoding in sensor system as taught by Itoh in order to perform an efficient image coding in image sensor system.

**Regarding claim 22**, Nakamura and Hirakoso disclose all the limitations of claim 20, which are therefore analyzed as previously discussed with respect to those claims.

Nakamura and Hirakoso do not disclose the monitoring unit, wherein the color encoding is defined in horizontal stripes and/or areas with yellow color encoding.

However Itoh teaches the color encoding is defined in horizontal areas with yellow color coding **[See Fig. 19; paragraph 0105].**

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the

horizontal areas with yellow color encoding in sensor system as taught by Itoh in order to perform an efficient image coding in image sensor system.

**Regarding claim 25**, Nakamura and Hirakoso disclose all the limitations of claim 22, which are therefore analyzed as previously discussed with respect to those claims.

Nakamura and Hirakoso do not disclose the monitoring unit, wherein the color encoding includes vertical stripes and/or areas having red and green color encoding.

However, Itoh discloses the color encoding includes vertical areas which have red and green color coding [See Fig. 20E; paragraph 0105 and 0106].

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the vertical areas with red and green color encoding in sensor system as taught by Itoh in order to perform an efficient image coding in image sensor system.

12. **Claims 23, 24, and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakamura et al. (US20040091133)** (hereinafter Nakamura) in view of **Hirakoso (JP2002026304A)**, and further in view of **Zhang (US2002/0039142A1)**.

**Regarding claim 23**, Nakamura and Hirakoso disclose all the limitations of claim 14, which are therefore analyzed as previously discussed with respect to that claim.

Neither Nakamura nor Hirakoso disclose the monitoring unit, wherein the color encoding is formed in color-coded stripes and/or areas embodied in a combination of two colors.

However, Zhang from the same or similar fields of endeavor teaches wherein the color encoding is formed in color-coded stripes and/or areas embodied in a combination of two colors **[See Fig. 16: R-G and B-G interpolation; paragraph 0022]**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the color encoding with a combination of two colors in sensor system as taught by Zhang in order to obtain a high quality image so as to achieve an efficient image coding in image sensor system (See paragraph 0002: Zhang).

**Regarding claim 24**, Nakamura and Hirakoso disclose all the limitations of claim 23, which are therefore analyzed as previously discussed with respect to those claims.

Neither Nakamura nor Hirakoso disclose the monitoring unit, wherein the color encoding includes vertical stripes and/or areas having red and green color encoding.

However, Zhang teaches vertical areas of color encoding with red and green coding **[See Fig. 19; paragraph 0031, 0032]**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the

vertical areas of color encoding with red and green coding in sensor system as taught by Zhang in order to obtain a high quality image so as to achieve an efficient image coding in image sensor system (See paragraph 0002: Zhang).

**Regarding claim 26**, Nakamura and Hirakoso disclose all the limitations of claim 14, which are therefore analyzed as previously discussed with respect to that claim.

Neither Nakamura nor Hirakoso disclose the monitoring unit, wherein the color encoding is defined in a Bayer pattern.

However, Zhang explicitly teaches the color encoding is defined in a Bayer pattern. **[See Fig. 14; paragraph 0007].**

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add the Bayer pattern in sensor system as taught by Zhang in order to obtain a high quality image so as to achieve an efficient image coding in image sensor system (See paragraph 0002: Zhang).

13. **Claims 27, 28, and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakamura et al. (US20040091133)** (hereinafter Nakamura) in view **Hirakoso (JP2002026304A)**, and further in view of **Pontifex et al. (US2003/0048493A1)**.

**Regarding claim 27**, Nakamura and Hirakoso disclose all the limitations of claim 14, which are therefore analyzed as previously discussed with respect to that claim.

Nakamura in view of Hirakoso fails to disclose monitoring unit wherein a ratio of monochrome coding to partial color encoding is 60:40.

However, Pontifex et al. from the same or similar fields of endeavor teaches a ratio of monochrome coding to partial color coded area is 3:1 of sensor area that is closed to the ratio range of 60:40 [See paragraph 0023].

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add a ratio of monochrome coding to partial color encoding in sensor area as taught by Hashimoto et al. in order to produce a sufficient high resolution in image sensor system.

**Regarding claim 28**, Nakamura and Hirakoso disclose all the limitations of claim 14, which are therefore analyzed as previously discussed with respect to that claim.

Nakamura in view of Hirakoso fails to disclose monitoring unit wherein a ratio of monochrome coding to partial color encoding is 75:25.

However, Pontifex et al. from the same or similar fields of endeavor teaches a beam splitter separates a ratio of monochrome coding (about 70%-80% of image) to partially color-coded area to a ratio between about 20% and 30% of sensor area which cover the ratio of 25% of color coded area. [See paragraphs 0007 and 0012].

It would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add a ratio of monochrome coding to partial color encoding in sensor area as taught by Pontifex et al. in order to produce a sufficient high resolution in image sensor system.

**Regarding claim 29**, Nakamura and Hirakoso disclose all the limitations of claim 14, which are therefore analyzed as previously discussed with respect to that claim.

Nakamura in view of Hirakoso fails to disclose monitoring unit wherein a ratio of monochrome coding to partial color encoding is 80:20.

However, Pontifex et al. from the same or similar fields of endeavor explicitly discloses a ratio of monochrome coding to partially color-coded area is 80:20% of the sensor area **[See paragraphs 0007 and 0012]**.

it would have been obvious to the person of ordinary skill in the art at the time of the invention to modify the system disclosed by Nakamura and Hirakoso to add a ratio of monochrome coding to partial color encoding in sensor system as taught by Pontifex et al. in order to produce a sufficient high resolution in image sensor system.

### ***Conclusion***

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ON MUNG whose telephone number is (571)270-7557. The examiner can normally be reached on 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Ustaris can be reached on 571-272-7383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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